

INDEPENDENT SCREENING FOR
NONPARAMETRIC ADDITIVE COX MODEL

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Abstract

Survival data with ultrahigh dimensional covariates are increasingly common recently due to the rapid development in technologies. It is challenging to model them using survival models in order to understand the association between covariate information and clinical information. In this paper, we focus on the nonparametric additive Cox's proportional model and propose an independent screening method for ultrahigh dimensional data. The proposed screening method is based on the favored bandwidth of the local partial likelihood estimator. Moreover, we develop a two-step procedure to recover all important covariates. This procedure first captures important variables with nonlinear impacts, and then identifies important variables with linear impacts. We further prove that the nonlinear step screening achieves the model selection consistency. Monte Carlo simulations are carried out to evaluate the performance of the proposed screening procedure, which provides evidence supporting the theory. Furthermore, we demonstrate the proposed methodology via a real data example.